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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/655,024	09/05/2003	Gun-Ok Jung	2557-000170/US	6042
30593	7590	07/28/2005	EXAMINER	
HARNESS, DICKEY & PIERCE, P.L.C.			COX, CASSANDRA F	
P.O. BOX 8910			ART UNIT	
RESTON, VA 20195			PAPER NUMBER	

2816

DATE MAILED: 07/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

SM

**Office Action Summary**

Application No.

10/655,024

Applicant(s)

JUNG ET AL.

Examiner

Cassandra Cox

Art Unit

2816

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --****Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 November 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-13 and 21 is/are allowed.
- 6) ☒ Claim(s) 1, 8, 14 and 15 is/are rejected.
- 7) ☒ Claim(s) 2-7 and 16-20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>2/10/05, 4/26/05</u> | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

Applicant's arguments filed April 26, 2005 have been fully considered but they are not persuasive. The rejection is repeated below.

#### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 8, and 14-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Takaya (U.S. Patent No. 5,783,967).

In reference to claim 1, Takaya discloses in Figure 2 a frequency multiplier comprising a delay circuit (22) that receives a first clock signal (21) having a first frequency and outputs a delayed clock signal, the delay circuit (22) producing the delayed clock signal by applying a time delay to the first clock signal (21); an XOR gate (26) that receives the first clock signal (21) and the delayed clock signal (output of delay block 22), performs an XOR operation on the first clock signal (21) and the delayed clock signal, and outputs a second clock signal (OUTPUT); a control circuit (23, 24, 25) that detects a phase difference between the first clock signal (21) and the delayed clock signal, and outputs a control signal to the delay circuit (22) corresponding to the detected phase difference, wherein the control signal controls a duration of the time delay applied to the first clock signal (21) by the delay circuit (22). The same applies to claims 14 and 15.

In reference to claim 8, Takaya discloses that the second clock signal (OUTPUT) would have a second frequency that is twice that of the first frequency (INPUT), see column 3, lines 40-50.

### ***Response to Arguments***

3. Applicant's arguments filed April 26, 2005 have been fully considered but they are not persuasive. Applicant's argument that Takaya does not disclose outputting a control signal that corresponds to the detected phase difference" is not persuasive. Takaya discloses a phase comparator as part of the control circuit, which determines the phase difference between two signals and outputs it as such. The signal outputted by the loop filter also corresponds to this detected phase difference. In response to Applicant's argument that Takaya does not disclose controlling a duration of the time delay applied to the first clock signal by the delay circuit, this argument is not persuasive. The delay is controlled based on the control signal, whether that is two clock cycles or  $2ns$ ; this is equivalent to a "duration of time of the time delay". Even using Applicant's argument that "Takaya merely discloses automatically correcting the delay of two voltage control delay circuits 22, 23 so that the output signal passes through the voltage control delay circuits 22, 23 are delayed 180 degrees in phase from the input signal", this is still equivalent to a duration of time. Therefore, the rejection is maintained and made Final.

### ***Allowable Subject Matter***

4. Claims 9-13 and 21 are allowed.

5. Claims 2-7, and 16-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter: Claims 2, 6-7, and 20 would be allowable because the closest prior art of record fails to disclose a circuit as shown in Figure 2 wherein the control signal (CTRL) includes a plurality of bit signals corresponding to the detected phase difference, each bit signal having a logic state in combination with the rest of the limitations of the base claims and any intervening claims. Claims 3-5 and 16-19 would be allowable because the closest prior art of record fails to disclose a circuit as shown in Figure 2 wherein the control circuit includes a comparator (232) and a counter (233) in combination with the rest of the limitations of the base claims and any intervening claims.

7. The following is an examiner's statement of reasons for allowance: Claims 9-13 and 21 are allowed because the closest prior art of record fails to disclose a circuit as shown in Figure 2 wherein the control circuit includes a comparator (232) and a counter (233) in combination with the rest of the limitations of the base claims and any intervening claims.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cassandra Cox whose telephone number is 571-272-1741. The examiner can normally be reached on Monday-Thursday from 7:00 AM to 4:30 PM and on alternate Fridays from 7:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Callahan can be reached on 571-272-1740. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2816

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

EC  
CC

July 24, 2005



TIMOTHY P. CALLAHAN  
SUPERVISORY PATENT EXAMINER  
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